

We claim:

1. Apparatus for splicing together sheets, comprising:

a base having an x-axis length, for supporting the ends of sheets laid about a butt line running along the x-axis;

a top, movable relative to the base, for clamping sheets in place for slitting or taping, the top having an x-axis which co-aligns with the x-axis of the base when the top is moved close to base;

means for guiding a tape dispenser carrier assembly and a slitter carrier assembly along the x-axis of the top;

a tape dispenser carrier assembly, movable along x-axis of the top by said means for guiding, for applying tape to sheets along the butt line; and,

a slitter carrier assembly, movable along the x-axis of the top by said means for guiding, for selectively slitting sheets and forming a butt line between overlapping ends of sheets laid upon the base.

2. The apparatus of claim 1 wherein the slitter slits sheet when moving in the minus x direction, and wherein the tape dispenser applies tape when moving in the plus x direction.

3. The apparatus of claim 2 wherein the slitter carrier assembly travel distance along the x-axis is greater than the travel distance of the tape dispenser carrier assembly along the x-axis.

4. The apparatus of claim 1 further comprising:

a main body supported on and interconnecting said carrier assemblies, for simultaneously moving the two carrier assemblies along the length of the top;

wherein, said carrier assemblies can move to independently of each other and relative to the main body, within the constraint of being interconnected.

5. The apparatus of claim 4 further comprising: means for creating frictional resistance to motion of the carrier assemblies along the x-axis of the means for guiding.

6. The apparatus of claim 4 further comprising:

a tape dispenser, part of the tape dispenser carrier assembly, the dispenser movable relative to the other parts of the tape dispenser carrier assembly, for dispensing tape along the butt line and onto the surface of the ends of sheets;

a spring, for urging the carrier assemblies apart, to an extent limited by said interconnecting main body;

stops at the opposing ends of the length of the top, for limiting the travel distances of the carrier assemblies; and,

cam means comprising a cam and cam follower, for controlling the motion of the tape dispenser relative to the tape dispenser carrier assembly in coordination with motion of the slitter carrier assembly relative to the tape dispenser carrier assembly, when the tape dispenser carrier assembly contacts a stop.

7. The apparatus of claim 6 further comprising means for cutting tape, movably mounted on the tape dispenser carrier assembly, wherein the means is moved as a result of motion of the main body relative to the tape dispenser carrier assembly, when said carrier assembly contacts a stop.

8. The apparatus of claim 1, wherein the top is hingedly connected to the base at one x-axis end of the base.

9. The apparatus of claim 6 wherein the cam means comprises a cam follower attached to the tape dispenser and a cam attached to the main body.

10. The apparatus of claim 2 wherein the slitter carrier assembly comprises:

a body having a bottom shaped to move along the length of the base in close proximity to sheet, when the top clamps sheet in place on the base, the body having a lengthwise groove for receiving a knife;

a knife, having a cutting edge, pivotably mounted on the body so that the cutting edge moves in to and out of the groove

means for biasing the pivoting of the knife, to urge the knife cutting edge to move into the groove,

wherein when sufficient force is applied to the knife to overcome said means for biasing, the knife cutting edge moves out of the groove to an extent which exposes the cutting edge beneath at the bottom of the body, so that any sheet lying on the base will be slit when the slitter carrier assembly is moved along the length of the top.

11. The splicer of claim 10 wherein there is frictional resistance to motion of the slitter carrier assembly body within said means for guiding, further comprising:

the slitter knife having an L-shape, wherein said cutting edge portion is at one end of the L and an arm part of the knife is at the opposing end of the L; and,

wherein a first level of force on the arm first rotates the knife against said biasing means, thereby exposing the blade, and wherein a second greater level of force overcomes the said frictional resistance, and causes the body to move along the guiding means toward said tape dispenser carrier assembly and the rear end of the top.

12. The splicer of claim 10 wherein there is a space between the slitter carrier assembly and the tape dispenser carrier assembly, further comprising:

spring means, for urging apart the slitter carrier assembly from the tape dispenser carrier assembly;

a stop, for limiting minus x-axis motion of the tape dispenser carrier assembly;

wherein when the tape dispenser carrier assembly hits the stop, force applied to said arm compresses said spring means and reduces the space between the carriers, so the slitter knife moves closer to the tape dispenser carrier assembly.

13. The splicer of claim 12 wherein the tape dispenser carrier assembly comprises a foot, movable into said space between the carrier assemblies, further comprising: means for lifting the foot out of said space as the slitter knife moves closer to the tape dispenser carrier assembly.

14. Apparatus for splicing sheets, comprising:

means for holding two sheets in a fixed position along a butt line;

a dispenser-cutter carrier assembly, having a first body; a tape dispenser, movably mounted on the top of the first body, for guiding tape along a tape path and onto the surface of the sheets at the butt line; and a cutter carrier assembly comprising a cutter blade having a cutting edge, mounted on the underside of first body and movable lengthwise along the butt line, for cutting tape running along the tape path; and,

guide means, for guiding the dispenser-cutter carrier assembly along a lengthwise travel path corresponding with said butt line.

15. The apparatus of claim 14, wherein the cutter carrier assembly further comprises: a wiper, for pressing down on tape as the tape is being applied to the sheets by the tape dispenser.

16. The apparatus of claim 15 wherein the cutter blade moves relative to the wiper, from a retracted position to a cutting position to cut the tape; wherein, when in the retracted position, the blade lies upon the wiper so that the cutting edge is inboard of the wiping edge; and, wherein, when in the cutting position, the cutting edge of the blade extends outboard of the wiping edge, to intersect the path of tape running from the tape dispenser onto the sheets

17. The apparatus of claim 16, wherein the tape dispenser comprises a foot assembly, for pressing on the tape as it is being applied to the surface of the sheets, further comprising: means for raising the foot assembly to a first predetermined elevation relative to the sheets, just prior to the movement of the cutter blade toward the tape path, so that tape is cut at a second predetermined elevation which is less than the first predetermined elevation.

18. The apparatus of claim 14 further comprising a tape dispenser having a foot assembly for pressing on the tape as it is being applied to the surface of the sheets, wherein the foot assembly comprises:

a foot having a channel defined by abutments running lengthwise and parallel to said travel path, wherein the channel receives and guides tape onto the surface of the sheets;

a keeper, for retaining the tape within said channel at times when tape is not being applied to sheet;

wherein, the keeper contacts only the raised abutments of the channel, to thereby enable tape being applied to the sheet to run within the channel free of any contact by the keeper.

19. The apparatus of claim 17, wherein said means for raising the foot assembly is a means for raising the whole of the tape dispenser, further comprising: cam means, for raising the tape

dispenser in coordination with said movement of the cutter blade; and, a stop for limiting lengthwise motion of the first body along said travel path; wherein, the cam means raises the tape dispenser as an effect of the first body hitting the stop.

20. Apparatus of claim 14 for splicing sheets, further comprising a slitter, for transversely slitting sheets; wherein said guide means guides both the slitter and tape dispenser carrier assembly along said lengthwise travel path.

21. Apparatus for splicing sheets, comprising:

clamp means, for holding a pair of sheets in overlapping fashion on the surface of a base;

a slitter, for transversely slitting said pair of overlapping sheets, to create a linear butt line therebetween;

taping means, for applying tape to the surface of the sheets along the linear butt line; and,

guide means, for guiding both the slitter and the taping means along a linear path corresponding with the butt line.

22. The apparatus of claim 21 wherein the slitter is movable in a first direction to slit the sheets; and, wherein the means for applying tape is movable in a second opposing direction to apply tape to the sheets.

23. Apparatus of claim 21, wherein said clamp means comprises:

a base having a surface for supporting and frictionally engaging a first sheet;

a top, movably mating with the base surface; having a first resilient strip and a second resilient strip for pressing on a first sheet lying upon the surface of the base when the top

mates with the base, said strips spaced apart on either side of said linear path and running parallel thereto; wherein the frictional resistance between said first strip and a sheet is substantially less than the frictional resistance between said surface of the base and said first sheet, when the top presses onto said first sheet, to hold the sheets onto the base.

24. The apparatus of claim 23 wherein the frictional resistance of the first strip with a sheet is substantially less than the corresponding frictional resistance of the second strip with the sheet.

25. The apparatus of claim 21 wherein said clamp means comprises: (a) a top which pivots downwardly onto the base from a hinge at one end of the top and base; and, (b) resilient strips running along the top, to contact the sheet when the top pivots down onto the base to hold sheets.

26. Apparatus for splicing sheets, comprising:

means for holding sheets in a fixed position along a butt line, to enable application of tape to the surface of sheets along the butt line;

a dispenser-cutter carrier assembly which comprises

a body;

a tape dispenser, movably mounted on the body, for guiding tape along a tape path and onto the surface of the sheets at the butt line, the tape dispenser comprising a foot assembly, for pressing on the tape as it is being applied to the surface of sheets held by the means for holding;

a cutter assembly comprising a cutter blade having a cutting edge, movably mounted on the body, for cutting tape being guided onto the surface of said sheets;

means for raising the foot assembly to a first predetermined elevation relative to the sheets, just prior to the movement of the cutter blade toward the tape path, so that tape is

cut at a second predetermined elevation which is less than the first predetermined elevation; and,

a wiper having a wiping edge, for pressing down on tape as the tape is being applied to the sheets by the tape dispenser;

wherein, the cutter blade moves relative to the wiper, from a retracted position to a cutting position, to cut the tape;

wherein, when in the retracted position, the cutter blade lies upon the wiper so that the cutting edge is inboard of the wiping edge;

wherein, when in the cutting position, the cutting edge of the blade extends outboard of the wiping edge, to intersect the tape path; and,

guide means, for guiding the dispenser-cutter carrier assembly along a travel path corresponding with said butt line.

27. Apparatus for splicing together sheets comprising:

a base having a length, for supporting the ends of sheets mated together to form a butt line running along the length;

a top, movable relative to the base, having a length corresponding with the length of the base, the top having means for guiding a dispenser-cutter carrier assembly and a slitter carrier assembly along the top length;

wherein when the top and base are moved to close proximity, surfaces thereof hold sheets in place for slitting or taping;

a slitter carrier assembly, for selectively slitting sheets and forming a butt line between overlapping sheets laid on the base;

a dispenser-cutter carrier assembly, for guiding tape along a tape path and onto the surface of the sheets at the butt line, for pressing down on tape as the tape is being applied to the sheets, and for cutting tape being guided onto the surface of sheets; and,

a main body supported upon and interconnecting said carrier assemblies, for moving the carrier assemblies along the length of the top.

28. Apparatus adapted for splicing together sheets which either have and do not have side edge perforations, comprising:

a base, having

a length and a horizontal surface for receiving ends of two different sheets in position for being spliced together;

first means for releasably frictionally clamping said sheets individually on said surface;

alignment means for positioning the edges of said sheets, associated with said first means for frictionally clamping;

an array of pins for engaging edge perforations of said sheets, including means for moving the pins from a first position where pins project above said horizontal base surface and a second position wherein the pins do not project above said surface; and,

means for applying tape to the two different sheets along a butt line, after the sheets have been either frictionally clamped by said first means or engaged with said array of pins.

29. The apparatus of claim 28 wherein said first means comprises clamps magnetically attracted toward the surface of the base.

30. The apparatus of claim 28 wherein said first means, said alignment means, and said array of pins are combined in a subassembly which is adjustably positionable along the length of the base.

31. The apparatus of claim 30 wherein the pin array is hinged from the underside of the base, further comprising: a rotatable actuator rod running the length of the underside of the base so that the hinged array rests on the rod; wherein rotation of the actuator rod to a first position pivots the array upwardly so pins project above the base surface and rotation of the rod to a second position lowers the pins beneath said surface.

32. Apparatus for splicing sheet, comprising:

a slitter carrier assembly (66) for slitting sheets to create a butt line therebetween; and

a dispenser-cutter carrier assembly (64) for applying tape to the sheets along a butt line;

wherein, said assemblies move in coordination across the sheets, to first slit and to then tape the sheets; and wherein the sequential motions of the carrier assemblies (66) and (64) are as shown in Fig. 9.

33. The method of splicing sheets which comprises:

placing and holding on a base surface a first pair of sheets to be spliced together along a butt line path;

moving a tape guiding foot lengthwise along the butt line path, from a first point forward to a second point, while pressing the foot on the sheet, to apply adhesive tape to the sheets along a butt line between the sheets;

stopping lengthwise motion of the foot at the second point;

lifting the foot vertically from the sheet and holding the foot above a predetermined elevation, to thereby cause a fixed length of tape to run through space from the sheet surface to the lifted foot;

cutting the tape along said fixed length of tape at said predetermined elevation, to thereby leave a tape free end extending downwardly from the foot to the vicinity of said predetermined elevation;

removing the spliced together sheets from the base surface;

placing and holding on the base surface a second pair of sheets to be spliced together along a butt line path;

moving said lifted and held foot rearward, back to the first point, to prevent said tape free end from contacting the sheets;

lowering the foot vertically onto the sheet at the first point, so the tape free end contacts and adheres to the sheet at a predetermined location; and,

repeating the step of moving the foot forward along the butt line, to adhere tape to the second pair of sheets.

34. The method of claim 33, wherein first and second sheets to be spliced are first placed and held on the base surface as overlapping sheets, which further comprises:

slitting the sheets during the step of moving the lifted foot rearward, back to the first point, to form a butt line therebetween and to create by said slitting a trim piece for each sheet, whereby the trim piece from the first sheet overlies the end of the second sheet; and,

removing and discarding said trim piece of the first sheet, prior to moving the foot from the first point to the second point and adhering the tape, by sliding the first sheet trim piece away from the base, while continuing to hold the remainder of the first sheet, the second sheet, and the trim piece of the second sheet on the base.

35. The method of claim 33 which further comprises applying tape along the butt line for a lesser distance than the total length of the butt line which is created between the sheets.